



A STUDY ON SCIENTIFIC ATTITUDE OF SCIENCE TEACHERS IN SECONDARY SCHOOLS OF MANCHERIAL DISTRICT, TELANGANA, INDIA

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ABSTRACT

Modern society is being influenced by the scientific environment and its applications and science has become an integral part of our daily life. Our thinking, our attitudes, our interests and our outlook have undergone tremendous changes. The acquisition of scientific attitude is one of the most important outcomes of science. Teachers of modern day are looked up as the main guide to prepare the students to achieve their objectives and aspirations and the teacher's attitude directly affects students' attitude. The present study determined the scientific attitudes of the science teachers using descriptive method of research. Data were gathered from 100 science teachers of both government and private high schools using scientific attitude scale as the main data gathering instrument. The level of scientific attitudes of science teachers is high in terms of open mindedness, aversion to superstitions, curiosity and objectivity while moderate in terms of suspended judgment and rationality. The academic performances of the science teachers were mostly satisfactory. There is no significant difference between the scientific attitudes of science teachers of government and private high schools.

KEY WORDS: scientific environment, scientific attitude, academic performance.

INTRODUCTION:

The main aim of education is to modify the behaviour of child according to the needs and expectations of the society. Behaviour is composed of so many attributes. One among is his environment, which influences the behaviour of a person. The entire personality and development of child is influenced by the nature of his attitudes. Learning of a subject and acquisition of habits, interest and other psychological dispositions are all affected by his attitudes. Therefore it is important for a teacher to understand the meaning and nature of attitudes, the factors responsible for its development in a child.

BACKGROUND:

The teacher's roles and responsibilities have found extension outside the classroom. The implementation of educational policies, transaction of curricula and spreading awareness are the main areas which keep teacher in the forefront. Changing times have added new dimension to this profession, which requires specified competencies and right attitude. Behaviour, attitude and interest of teacher help in shaping the personality of the student.

Generally speaking, 'Education' is utilized in three senses: Knowledge, Subject and a Process.

Meaning and Importance of science:

The word science has its origin from a Latin word "Scientia" meaning "to know". Science is universal but has been defined in different ways e.g.,

"Science is a heap of truth."

"Science is a systematized body of knowledge."

"Science is nothing but organized common sense."

The present world is a scientific world and today science is every body's concern. At the present juncture we cannot think of world without science. In the dominating role of Science in the modern world it has become imperative for any nation of the world to promote science education in their country. We cannot expect improved science education in higher institutions of science and technology unless we succeed in providing sound science education in schools more over every citizen of the modern world needs to know sufficient quantum of every day science during school education. It would be right to say that every turn and almost all every moment of his day. Man in the modern world is affected by science whether he is aware of it or not. By teaching science we aim at bringing about desirable behavioural changes among the pupils. Teaching is thus a most difficult task and everybody is not fit to be a teacher. Some persons may have a "flair" for teaching and such persons have the ability to awaken interest the attention of the students.

Place of the science in school curriculum:

The man's futures are linked to scientific advance and the development of productive activity obviously. Therefore science must find a respectable place in the school curriculum all the world over. This feeling generated in India through the efforts of NCERT, science has been made a compulsory subject throughout the school stage.

Development of scientific attitude:

Science, in the curriculum, provides certain scientific values which are not provided by any other subject. The school subjects are taught because they provide liberal education; they are part of the equipment and preparation for life which we expect the school to give to its students so that they may play their part in the community as intellectual citizens. Science is extremely important to one's education just like any subjects offered in school. It provides information and understanding the principles within the facets of living and non-living matters. Supplementary to this, learning science provides the practice of scientific method which develops the scientific attitude, which leads us to think critically and value facts with evidence. Scientific attitude plays a major role in science education and in the lives of students pursuing science education. This growing awareness of the need and importance of science has become mostly manifested in the Philippines. The basic education curriculum in the country had undergone several changes primarily to address the issues on quality and relevance

Science is first of all a set of attitude. It is disposition to deal with facts rather than with what someone has said about them. Further, Science as a subject has very important virtues peculiar to it. The study of science imparts training in Scientific Method and develops scientific attitude in learners. Scientific attitude is most important outcome of science teaching, through some people view the scientific attitude as the byproduct teaching science, yet a majority of people consider it is equally important as knowledge aspect. Scientific attitude is a very significant concern of the process of science Education. In this connection the characteristics of scientific attitude are:

- a) Open – mindedness
- b) A desire for accurate knowledge
- c) Confidence in procedures for seeking knowledge and the expectation that the solution of the problem will come through the use of verified knowledge

The teachers should always remember that without a questioning mind and a spirit of enquiry. Studies in science will only mean acceptance of dogma and will never lead to development of scientific attitude in learners. The students should be made to practice and observe science so that get opportunity to feel and develop the components of scientific attitude in their minds.

OBJECTIVES:

- 1) To know the levels of scientific attitude science teachers.
- 2) To know the significant difference between Government and private science teachers about their scientific attitude.

SIGNIFICANCE OF THE STUDY:

The sole responsibility of developing scientific attitude among the students lies on the teacher who can manipulate all situations to instill in pupils a scientific attitude and at the same time present himself as a role model. This will create a favourable and permanent impression on the students to adopt the same attitude which the teacher has.

Who else can develop scientific attitude in children better than science teacher. But, the pre-requisite is that these science teachers should set an example for the

students with a developed scientific attitude and should full of enthusiasm because an enthusiasm helps in context of effective curriculum transaction by making provisions for optimum physical facilities and providing opportunities for practical work. Therefore, active desire of teachers to cultivate habits and action can gradually lead to acquisition of scientific attitudes.

Research Design:

In the present study the descriptive survey method was used. The investigator adopted the technique according to the research study. In the present study the investigator calculated the scores and percentage of scores wherever necessary with category wise scientific attitude.

Mean and standard deviation calculated wherever necessary. The significant t-test was calculated in the study.

Study is descriptive random sampling method to cover Mancherial District of Adilabad District. Descriptive random sampling survey method was used to the sample from the population was used to the sample for the present study consists of 50 members of Government teachers and 50 members of Private teachers.

Sampling technique:

Stratified random sampling technique was used to draw the sample form the population of the sample for the present study consist 50 government science teachers and 50 private science teachers. They were selected from government and private secondary schools of Mancherial District.

Sample:

The sample selected for the present study is 100 Science teachers from 50 Secondary Schools. This sample is small enough to avoid unnecessary expenditures and larges energy to avoid sampling errors. The researcher has selected 25 government schools and 25 private schools in Mancherial District”.

Total sample of 100 Science teachers is designed as follows.

Table 1: Sample distribution

Sr. No	Schools	No. of Schools	Gender		Total
			Male	Female	
1	Government Schools	25	25	25	50
2	Private Schools	25	25	25	50
	Total	50	50	50	100

Description of Tool:

In order to prepare tool of scientific attitude of science teachers contain 30 statements. These statements were prepared by researcher. At the end of each statement marked with strongly agree (SA), agree(A), undecided(U), disagree(D), strongly disagree(SD) . All statements are positive statements.

Administration of Tool:

Researcher visited the selected schools and seeking permission of school authority and tool was administrated to science teachers of selected schools. Before giving the test to the selected school teachers necessary instructions have been clearly given. Same teachers asked doubts regarding same questions. The researcher clarified it. After filling the answers the researcher collected the opinionnaires finally researcher has gathered data after gathering data the researcher has arranged data in tables for analyzing the data.

Scoring:

The score has 5 point scale for the purpose of scoring numerical values given 5 points for strongly agree, 4 points for agree, 3 points for undecided, 2 points for disagree, 1 points for strongly disagree.

Table 2: Numerical values for statements

Scale	Points
Strongly agree	5
Agree	4
Undecided	3
Disagree	2
Strongly disagree	1

Statistical Analysis:

The data relating to scientific attitude scores of science teachers in relation to certain variables has been summarized in a data sheet for 50 teachers according to sex and type of school. Appropriate coding was given to facilitate statistical calculations. The data was entered in excel work sheet and the analysis was done by using S.P.S.S. (Statistical Package for Social Sciences) software.

Mean and standard deviation calculated wherever necessary. The significant t-test was used in the study.

The significance levels employed with respective symbols are given below:

T- Table value at 5 %level of significance at

1. 98 degrees of freedom is 2.1

To compare the scientific attitude of government and private science teachers mean and standard deviation calculated.

To identify the level of scientific attitude of science teachers frequency percent-age was calculated.

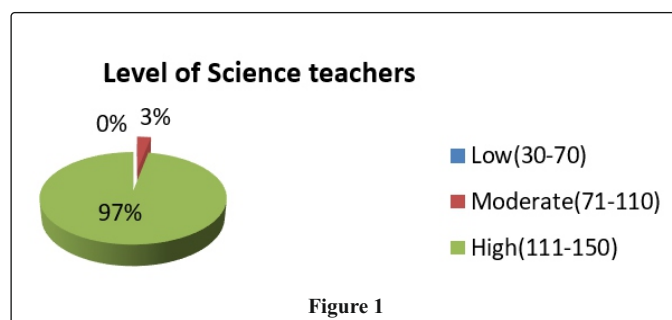
Objective: 1

To know the levels of scientific attitude of science teachers.

Table 3: The levels of scientific attitude of science teachers

Sr. No	Category	Distribution	Frequency	Percentage
1	High	111-150	97	97
2	Average	71-110	3	3
3	Low	30-70	0	0

As per above table indicates that most of the science teachers have scientific attitude . Total sample of science teachers in our study is 100 members out of them nobody have low scientific attitude. 3 members have average scientific attitude with 3 percent and 97 percent members have high scientific attitude with the percent of 97.



Objective: 2

To know the significant difference between Government and Private science teachers about their scientific attitude.

Table 4: Management wise performance

Variable	Sample	Mean	SD	Std. Error Mean	t-value
Government teachers	50	4.34	0.34	0.05	1.012
Private Teachers	50	4.29	0.17	0.02	

As per above table the calculated “t” value is 1.012 and the Government teachers mean value is 4.34 and private teachers mean value is 4.29 there is no significance difference between government and private teachers attitude towards their scientific attitude but based on the mean value government science teachers have more scientific attitude .

T – value is 1.012 < 1.98 at 0.05 level of Significance. Hence the Hypothesis -2 accepted.

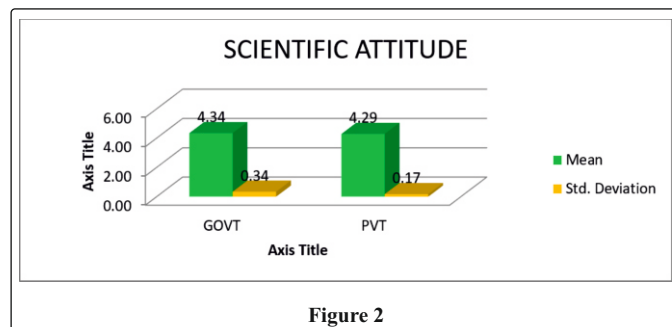


Figure 2

FINDINGS:

- Science teachers have high level of scientific attitude.
- There is no significant difference between Government and Private Science teachers Scientific attitude.

DISCUSSIONS:

Science teachers have high level scientific attitude in government and private schools. To be proactive teachers is to be one who is essentially positive, fixable, democratic and capable of setting responsible for individual students. The views of government and private science teachers have no significant difference. Both are having more positive attitude towards their scientific attitude. Teachers can motivator and creator to pupils scientific thinking and enhance scientific attitude in their views.

SUGGESTIONS:

- 1) Create scientific attitude in secondary school students.
- 2) Increase the science programs in secondary schools.
- 3) Create a good science class room.
- 4) Conduct various science programs like science fairs, field trips etc.,

SUMMARY:

The major objective of teaching science in the schools is knowledge understanding, application, skill, interest, attitudes and appreciations, science teaching. Teaching must develop certain attitudes among the learners. These attitudes are popularly known as scientific attitude.

Science education occupies a very important place in curriculum and it should primarily be concerned with the education of the mind rather than occlusion of isolated pieces of scientific knowledge through effective science reaching only scientific attitudes can be developed. But it is usually observed that science is taught in schools at secondary levels just like other subjects and secondary school science teachers like open mindedness objectivity in observation and education and possession of critical thinking to possess these characteristics the pre request is that science teachers first should have developed scientific attitude.

CONCLUSION:

The researcher found that teachers support that teachers with a scientific a bend and a scientific temper can successfully develop scientific attitude in secondary school students. Thus, it can be concluding that the science teacher has an important role to play in molding the child's scientific attitude, a teacher therefore should be a). Unbiased, broad-minded, Non-superstitious, avoid exaggerations, and adopt planned procedures for doing work. Teacher should train the students to transfer their learning to daily life situations and should relate science to other disciplines. Certain reforms should also be made in the present curriculum like.

- a) Unnecessary details and topics not interesting to the students should be deleted.
- b) More provisions for teaching science subjects practically should be planned and laboratory work, filed work (marks weight ages) should be given
- c) There should be separate teacher's handbook for guide teachers in classification concepts and showing experiments.
- d) In- service training should be provide to secondary school science teachers to orient them towards teaching science inductively. Workshop, in science experiments, if held, will go a long way in guiding the teachers to show experiments in class with ease, confidence and precisions to orient them towards teaching science inductively. Workshop, in science experiments, if held, will go a long way in guiding the teachers to show experiments in class with ease, confidence and precision.

Educational implications:

- 1) The study enables to know the views of science teachers scientific attitude
- 2) This study helps to know the implementation of science programmes in the secondary schools.
- 3) This study show the level of attitude in government and private sectors.
- 4) A well science teacher can develop scientific temper in the students.
- 5) This study tells us that science teachers have positive view to develop scientific attitude among secondary students.

OPINIONNAIRE:

1. This opinionnaire consists of 30 statements aimed to ascertain the parameter that are helpful in developing scientific attitude among secondary school students.
2. There is no right or wrong answers but it is your own feeling of opinion about the statements,
3. Put a tick mark in the optioned provided.

SA = Strongly Agree; A = Agree; U = Undecided;
D = Disagree; SD = Strongly Disagree

STATEMENTS

Sl. No	Opinion	SA	A	U	D	SD
1	The science teacher needs to work towards the knowledge achievement of students and also development of scientific attitude among the students					
2	The teachers must have a scientific attitude to develop scientific attitude among students.					
3	Developing scientific attitude among the students depends upon science teacher.					
4	The development of scientific attitude is a difficult task.					
5	To know the information related to science helps to enhance scientific attitude among the students.					
6	The subjects other than science can also contribute for developing scientific attitude among the students					
7	Broad – minded teachers inculcate scientific attitude among the students.					
8	Teaching science in a more practical way helps in developing scientific attitude among the students					
9	By making the children to read Biographies of scientific and their discoveries help in developing scientific attitude.					
10	Visits and field trips to institutes helps in developing scientific attitude among the students					
11	A congenial atmosphere in the classroom helps in developing scientific attitude among the students					
12	Effective ways to teaching science also inculcate scientific attitude among the students.					
13	The Science teacher who enjoys teaching science helps in developing scientific attitude among the students					
14	Enthusiastic teachers bring life and positive energy into a class room which can inculcate scientific attitude among the students					
15	Dealing facts in an unbiased way can make a favourable impression upon pupils which inculcate scientific attitude among the students					
16	Greater exposure to science helps the teacher to develop scientific attitude among the students					
17	Rewards & satisfaction too can inculcate scientific attitude among the students					
18	The teacher should make a check on accepting half-truths & superstitions which develops scientific attitude among the students					
19	In service science training programmes are strengthen the science teacher that strength reflects his/her teaching to enhance scientific attitude among the students					
20	By using ICT in teaching science can create scientific attitude among the students					
21	A good hand book supports science teacher in teaching science that can also create interest to words scientific attitude among the students					

22	Conduct the science fairs helps to develop scientific attitude among the students					
23	Giving guest lectures by scientific attitude people can develop scientific attitude among the students					
24	By using print media in teaching science can enhance scientific attitude among the students					
25	By conducting science quiz & group discussions will help to develop scientific attitude among the students					
26	Science experiments are useful to develop scientific attitude among the students					
27	Interact with scientists will help to develop scientific attitude among the students					
28	Teacher should update his/her scientific knowledge regularly than he/she can inculcate scientific attitude among the students					
29	Through NGC programme teachers can inculcate scientific attitude among the students					
30	By making the children to prepare working models in science will help to improve scientific attitude among the students					

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